

A NOTE ON CATCHES OF FRUIT FLIES (DIPTERA: TEPHRITIDAE) AT DIFFERENT TRAP HEIGHTS IN NORTH QUEENSLAND

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Abstract

Fruit fly traps baited with methyl eugenol lures placed at a height of 8-10 m in mango (*Mangifera indica*) tree canopies caught more flies of genus *Bactrocera* Macquart than those placed at a height of 1.7 m. Of the seven species collected, three were recorded only from the higher elevated traps and one only from the lower traps during the six-week study period.

Introduction

Conventional fruit fly trapping has traditionally been conducted at head height (c. 1.7 m) for reasons of convenience. However, preferred habitat for fruit flies appears to be the canopy, where food and shelter may be more prevalent. This raises the possibility that traps placed higher in the canopy may catch more flies and/or more species of flies than those at lower elevation.

Materials and methods

Six Steiner traps (see Drew 1982) baited with methyl eugenol lures, were placed between 8 and 10 m above the ground in the foliage of mature mango (*Mangifera indica*) trees in open forest at Ellis Beach, north of Cairns. Six identical traps were placed 1.7 m above ground under the same trees. The elevated traps were suspended by fishing line and lowered to ground level for clearance. The distance between the first and last traps was approximately 3 kilometres, but the vegetation remained similar. For six weeks, from 4 August 1997 to 11 September 1997, the traps were cleared every 3 or 4 days. Trapped flies were counted and identified to species level.

Results

Trap catches recorded are shown in Table 1. Only 89 flies were trapped but the Ellis Beach area had been heavily treated since November 1995, as part of the Papaya Fruit Fly Eradication Programme and populations of fruit fly species attracted by methyl eugenol were generally low.

Bactrocera endiandrae (Perkins & May) and *B. mayi* (Hardy) were the most abundant species collected. Three species, *B. laticaudus* (Hardy), *B. pallida* (Perkins & May) and *B. visenda* (Hardy) were collected only in the elevated traps, whilst *B. musae* (Tryon) was collected only in traps at the lower level. The specimens of *B. musae* probably originated from a nearby stand of bananas. An undescribed species close to *B. ochromarginis* (Drew) was collected at both heights. None of the species collected has been found to breed in mangoes (Drew 1989; Papaya Fruit Fly Eradication Programme, unpublished data).

Table 1. *Bactrocera* fruit flies trapped in mango trees 8 to 10 metres above ground and 1.7 metres above ground at Ellis Beach.

Species trapped	Number of flies caught at:	
	8 - 10 metres	1.7 metres
<i>B. endiandrae</i>	31	8
<i>B. mayi</i>	28	9
<i>B. laticaudus</i>	7	0
<i>B. pallida</i>	1	0
<i>B. visenda</i>	1	0
<i>B. musae</i>	0	2
<i>B. sp. n. nr ochromarginis</i>	1	1
TOTAL	69	20

Discussion

Hooper and Drew (1979) detected no significant effect of trap height on capture of flies responding to methyl eugenol in an open forest environment but found that there was an effect in rainforests, where significantly more flies were collected in higher traps. The larger number of flies found in elevated traps in open forest in this study reflects that found by Hooper and Drew (1979) in rainforests. This suggests that, at least in areas of low fly population density, placing traps high up in trees with a dense canopy may increase the efficiency of detection. Mango tree canopies in an open forest environment afford denser foliage cover than eucalypts and may explain the difference observed between the two studies.

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References

- DREW, R.A.I. 1982. Fruit fly collecting. Section IV, pp 129-139 in: Drew, R.A.I., Hooper, G.H.S. and Bateman, M.A., *Economic fruit flies of the South Pacific region*. 2nd ed. Queensland Department of Primary Industries, Brisbane; 139 pp.
- DREW, R.A.I. 1989. The tropical fruit flies (Diptera: Tephritidae: Dacinae) of the Australasian and Oceanian regions. *Memoirs of the Queensland Museum* 26: 1-521.
- HOOPER, G.H.S. and DREW, R.A.I. 1979. Effect of height of trap on capture of tephritid fruit flies with cue lure and methyl eugenol in different environments. *Environmental Entomology* 8: 786-788.